

June 22, 2007

Ex Parte Presentation

Via Electronic Submission

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street S.W.
Washington, DC 20554

Re: *Amendment of the Commission's Part 90 Rules in the 904-909.75
and 919.75-928 MHz Bands*, WT Docket 06-49

Dear Ms. Dortch,

Progeny LMS, LLC ("Progeny") responds to the letters dated June 15, 2007 (the "Letter") and June 19, 2007, by Henry Goldberg and Mitchell Lazarus on behalf of the Part 15 Coalition, and the accompanying presentation by Carl R. Stevenson submitted with the June 19 letter (the "Presentation.")¹

Much of the material in the Letter and the Presentation has been previously addressed. The FCC has a full record before it to move forward in this Multilateration-Location and Monitoring ("M-LMS") flexibility proceeding and, more than five years after Progeny's petition for rulemaking, this decision is ripe for review. To ensure there are no outstanding technical questions, Progeny responds to these filings to provide clarification to several limited issues.

High Power / Few Sites versus Low Power / Many Sites

The first few pages of the Presentation contain statements that Progeny has already refuted, namely that lower power leads to lower interference. For the sake of clarity, Progeny reiterates that there are several problems with this analysis.

¹The Part 15 Coalition, Amendments of the Commission's Part 90 Rules in the 904-909.75 and 919.75-928 MHz bands, *Notice of Ex Parte*, WT Docket 06-49, filed June 19, 2007 and *Letter*, WT Docket 06-49, filed June 15, 2007.

- First, while Mr. Stevenson’s argument may be correct for an individual site, it ignores the fact that Progeny will be providing coverage with multiple overlapping sites that are designed to achieve a specific coverage-edge receive signal strength level. Mr. Stevenson’s analysis, as presented, assumes only single site operation and falls apart when you add a coverage area requirement, because more sites are needed and the total cumulative area of individual site interference area contributions totals the same area as would be generated by a single higher power site.
- Second, the Part 15 Coalition misused a theoretical analysis Progeny presented² to show the overload effect of near-channel energy to automatic meter reading (AMR) systems operating in the middle of the band.³ The analysis tried to use it to represent an operating condition for LMS and, further, to create an inappropriate analysis of co-channel interference conditions. Just because Progeny assumes a signal level of -68.8 dBm in order to make a theoretical argument about a single operating condition says nothing about some other unrelated condition. For the record, Progeny does not believe that this power level is required for its system to operate, nor does it believe free space loss is an appropriate propagation model to use.
- Third, the Presentation states that Progeny did not identify the spacing of the adjacent channel. In fact, Progeny stated the exact adjacent channel conditions that were the basis for the analysis in its May 2006 NPRM response, which stated: “[C]onsider the case of Itron’s AMR devices, which operate outdoors and transmit data to meter readers or nearby base stations at 915 ± 5 MHz.⁴ These devices operate well outside the licensed M-LMS band; their center frequency is 6 MHz from the closest edge of the M-LMS ‘A Block’ and 4 MHz from the closest edge of the M-LMS ‘B Block.’ It is a standard engineering practice for radio receivers to be able to tolerate signals transmitting up to and beyond -28.8 dBm in *adjacent* channels.”⁵

² *Amendment of the Commission’s Part 90 Rules in the 904-909.75 and 919.75-928 MHz Bands*, Notice of Proposed Rulemaking (“M-LMS NPRM”), WT Docket 06-49, *Comment*, filed by Progeny May 30, 2006, Appendix B.

³ That is, 915 ± 5 MHz.

⁴ Footnote in original text omitted.

⁵ M-LMS NPRM, WT Docket 06-49, *Comment*, filed by Progeny May 30, 2006, at page 27.

The Part 15 Coalition ex parte filing faults Progeny's analysis for only calculating the effects of adjacent channel interference potential. Of course, no co-channel analysis was needed since the analysis was related to answering questions about AMR concerns. Progeny has provided a co-channel analysis in prior documents and filings when characterizing other interference conditions.

Peak Power Limits

The Presentation (p. 5) states that peak power does cause interference and that Part 15 devices are subject to peak, not average, power measurements. The FCC disagrees with this statement and has clearly said so when adopting changes to technical rules for unlicensed radiofrequency devices in Parts 2 and 15 of its rules.⁶ The *Part 15 Order* describes the rule changes being made to bring all Part 15 digital modulation rules into conformance with average or RMS power measurements.⁷

Further, the Commission has specified a limit on peak/average ratio of 13 dB in the 700 MHz Report and Order and Further Notice of Proposed Rulemaking.⁸ This number is identical to the 13 dB number noted in the *Part 15 Order*, where it is used as the maximum allowable peak to average ratio for UNII devices operating under Part 15.407(A)6.⁹

Progeny can accept the same 13 dB limits.

⁶ In the Matter of Modification of Parts 2 and 15 of the Commission's Rules for Unlicensed Devices and Equipment Approval, ET Docket No. 03-201, *Report and Order*, released July 12, 2004 ("Part 15 Order"), ¶ 30: "In adopting the U-NII rules, the Commission recognized that digital modulation techniques often display short duration peaks that do not cause increased interference to other operations. Measuring the peak level of short duration spikes overestimates interference potential. Accordingly, the Commission established measurement procedures for digital U-NII devices which allow for averaging output power in order to disregard these insignificant spikes."

⁷ *Part 15 Order*, ¶ 31 to 39.

⁸ In the Matter of Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, Report and Order and Further Notice of Proposed Rulemaking, WT Docket 06-150, released April 27, 2007, at ¶106.

⁹ 15.407 (a)(6). "The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less."

Duty Cycle

Part 15 devices do not generally have a duty cycle requirement. The “duty cycle” alluded to in the Coalition’s Presentation (p. 6) is not really a duty cycle, in fact it is the dwell time on channel for a frequency hopping system. The slides incorrectly note that the duty cycle is 4% and is outlined in 15.247a(i). This section is nonexistent. We believe Mr. Stevenson meant to reference 15.247a(1)i which reads:

(i) For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

Thus, the 4% number referenced is a dwell time for an FHSS device with a carrier bandwidth exceeding 250 kHz. If the hop carrier is smaller than 250 kHz, then the dwell time is 2%.

This dwell time is relevant only to FHSS systems. Other digital modulations that also lead to spreading, including PSK and QAM, DSSS and OFDM, do not have these dwell times associated with their use and seem to have no restrictions of any sort that amount to a duty cycle.

Testing

As for testing requirements, Progeny reiterates the points we have been making:

- It is impossible to test for interference to unknown devices.
- It is vulnerable to exploitation.
- It makes no business sense to build each market when subject to such a nebulous requirement.

Progeny has repeatedly requested that the field testing requirement in Section 90.353(d) be replaced with specific technical limits and a coordination process triggered when unacceptable interference occurs.¹⁰

In its Proposal, Progeny defined the specific technical limits; the conditions that trigger a coordination process; and the remedy to be employed when necessary.¹¹

¹⁰ M-LMS NPRM, WT Docket 06-49, *Comment*, filed by Progeny May 30, 2006, at page 44.

The trigger was selected so that most Part 15 devices would only experience that power level when within a few meters of an M-LMS base station. The few Part 15 devices that might experience power levels in excess of the trigger at a greater distance can be identified during the site survey that necessarily precedes base station deployment. This is because the PSD that an M-LMS transmitter would cause to the Part 15 device is easily inferred from the signal strength received at the base station site because the propagation losses are the same in each direction.

In accordance with Section 1.1206(b) of the Commission's Rules, this letter is being filed with your office. Should you have any questions or concerns in connection with this submission, please contact me at +1 (703) 623-6884 (mobile) or by email at CAgnew@ProgenyLMS.com.

¹¹ *Amendment of the Commission's Part 90 Rules in the 904-909.75 and 919.75-928 MHz Bands*, WT Docket 06-49, *Letter and Proposal*, filed by Progeny, April 3, 2007.

Sincerely,



Carson Agnew
President
Progeny LMS, LLC

Cc: Chairman Kevin J. Martin
Commissioner Michael J. Copps
Commissioner Jonathan S. Adelstein
Commissioner Deborah Taylor Tate
Commissioner Robert M. McDowell
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